

## Background

An excellent summary of the early years of the National Weather Service's hydrology program can be found in the publication "A Plan for Improving The National River and Flood Forecast and Warning Service, Office of Hydrology, December 1969". The following, pages 2 - 4, is an excerpt, from this publication.

### History of the Weather Bureau's River and Flood Forecast and Warning Program

The hydrologic program of the Weather Bureau has its historical roots in the early development of Federal weather services. Joint Congressional Resolution H.R. 143 of February 2, 1870, established a Weather Service and assigned it to the Signal Service of the War Department. By 1873, this Service had been called upon to correlate weather and river and stream conditions. Daily river stage readings were being obtained and published and collection of river and flood data had commenced.

The Congressional Organic Act of October 1, 1890, assigned to the Weather Bureau the duties of "...the forecasting of weather, the issue of storm warnings, the display of weather and flood signals for the benefit of agriculture, commerce, and navigation, the gauging and reporting of rivers..." On July 1, 1891, the Weather Service was transferred from the Signal Service to the Department of Agriculture, and the Weather Bureau *was* established.

In September 1893 a system of 16 river districts was established and river and flood forecasting responsibility was delegated to local station officials. In 1894 this system was increased to 21 river districts. Expansion of the river and flood service continued through the turn of the century. By 1911, there were 601 paid and cooperative stations reporting to a total of 56 river districts. River forecasters were receiving daily reports of river stages and changes during the previous 24 hours, and forecasting river levels for periods up to several days on the basis of empirical rules and personal knowledge of the river basin. Daily river bulletins were issued by most larger stations and included a copy of the weather map and tables of temperature, wind, and precipitation data.

In the mid-thirties a vast expansion took place and the river and flood service progressed rapidly toward implementation of important new forecasting techniques. In 1937 the Hydrometeorological Research Section was established and the subdivision of the United States into hydrologic regions was initiated for the purpose of procedure development and analysis of rainfall-runoff relationships. Reorganization Plan No. IV of June 30, 1940, transferred the Weather Bureau from the Department of Agriculture to the Department of Commerce. The continued responsibility of the Bureau to provide hydrologic services was further emphasized by 15 U.S.C. 313. Development proceeded in three general areas of activity:

- a. Refinement and amplification of observations and reports of rainfall and river stages in upstream areas of major drainage basins and improvement of forecasting methods.
- b. Analysis and interpretation of rainfall and snowmelt for use by the Corps of Engineers and the Department of Agriculture in the design of water management projects.

- c. Expansion of the mountain snowfall service in western United States.

By 1940, the collection of basic *data* and preparation of forecasts and warnings was being carried out through 73 river district offices and procedures for making forecasts were gradually being refined and extended throughout the 10 established hydrologic regions of the country.

By 1945 the Nation had been divided into 85 river districts, each with a regular Weather Bureau Office designated as a River District Office and each embracing one or more river basins or parts of larger river basins. Each office was assigned responsibility for the entire river program within its district in addition to other meteorological responsibilities that included data acquisition, general public service, and aviation service. Development of the present service began in 1946 with the establishment of two River Forecast Centers, staffed by professional hydrologists, to prepare river and flood forecasts and refine hydrologic forecast procedures for specified areas. During this same period, the river and flood service and the climate and crop weather service were consolidated into the Division of Climatological and Hydrologic Services. This consolidation was terminated in September 1951 with the establishment of the Hydrologic Services Division and the Climatological Services Division.

During the ensuing years, further development and improvement of the hydrologic service has followed a consistent trend characterized by the establishment of additional forecast centers and improvement of forecast procedures. By Department of Commerce Order 91 (revised) effective April 15, 1964, the Hydrologic Services Division became the Office of Hydrology with broad responsibility for the acquisition of hydrologic data, the preparation and dissemination of hydrologic forecasts and warnings, and the analysis and interpretation of hydrologic data--as discussed in detail in section 2.0 of this plan. The continuing responsibility of the Weather Bureau to provide hydrologic services has been reaffirmed during the recent consolidation (1965) of the environmental service functions of the Department of Commerce into the Environmental Science Services Administration (ESSA).

Five years later, in 1970, ESSA would turn into the National Oceanic and Atmospheric Administration (NOAA).